Aluminum Roofing System

New Roofing Chips Create Affordable, Energy-Efficient Aluminum Roofing System

Through a grant from the Department of Energy's Inventions and Innovation Program, Transmet Corporation developed aluminum roofing chips that exhibit superior solar reflectance compared with competing roofing systems. The chips are tiny aluminum particles made in a proprietary process that rapidly solidifies small streams of liquid metal. When air is sprayed at a rate of 3 to 4 lb/sq. ft. onto the surface of the asphalt flood coat, the chips form a highly reflective roof surface. The chips weigh only 3 to 4 pounds/100 square feet compared with stone aggregate coverings of 300 pounds/100 square feet.

Factory applications of aluminum chips to rolled roofing materials are gaining acceptance. In most cases, only minor adjustments to the manufacturer's granule equipment are needed to account for the different flow properties of chips compared with granules.

Benefits

Energy Savings

Reduces building heat conductivity by up to 35%, keeping the building cooler. Covering one small commercial roof with a surface area of 10,000 square feet would result in annual energy savings of 79 million Btu.

Product Quality

Greatly extends roof life by reflecting 77% of incoming infrared solar energy and 75% of ultraviolet energy. Accelerated aging tests have shown negligible deterioration of the reflectivity and emissivity properties.

Profitability

Reduces maintenance costs. Eliminates the need for recoating. Saves as much as $10/100 square feet compared with asphalt.

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Overview

- Developed by Transmet Corporation
- Commercialized in 1984
- Installed on more than 35 million square feet of roof

Energy Savings

(Trillion Btu)

Cumulative through 2000	2000
0.650	0.014

Emissions Reductions

(Thousand Tons, 2000)

Particulates	SO_X	NO_X	Carbon
0.0	0.002	0.002	0.249

Applications

- Roofing for industrial, commercial, and institutional buildings
- Filler for plastics to enhance thermal and electrical properties
- Feedstock for chemical processes that require aluminum content
- Shot-blasting media for aluminum products

Capabilities

Rapidly solidifies liquid metal to produce air-sprayable small particles.

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